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AUTHOR McDaniel, Ernest
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ABSTRACT

An instrument was developed for observing teaching behaviors related to some of the theoretical components of inquiry teaching. Four scales were designed to measure personalized planning, confrontational emphasis, transitional querying, and manipulative opportunities. Inter-rater reliability was obtained for ten taped samples of secondary social studies classes. Evidence of validity was obtained by correlating the observation ratings with independent measures of divergent and evaluative questioning and with ranking of teachers for inquiry processes. It was determined through the reliability and validity data that the observation scales were promising instruments for use in research related to inquiry teaching processes. (Author/MH)

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AN OBSERVATION SCALE FOR INQUIRY TEACHING

Ernest McDaniel

Purdue University

West Lafayette, Indiana

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Abstract

An instrument for observing teaching behaviors considered relevant for inquiry is described. Four scales were designed to measure personalized planning, confrontational emphasis, transitional quering and manipulative opportunities. Inter-rater reliability was obtained for ten taped samples of secondary social studies classes. Evidence of validity was obtained by correlating the observation ratings with independent measures of divergent and evaluative questioning and with ranking of teachers for inquiry processes. Both the reliability and validity data suggest that the observation scales are promising instruments for use in research where teaching behaviors related to inquiry process are important.

AN OBSERVATION SCALE FOR INQUIRY TEACHING

Work on teacher observation scales has exhibited tremendous progress in the last two decades. Almost without exception, however, the teaching behaviors incorporated in such scales have been some aspect of teaching that seemed conducive to classroom climate or content achievement, i.e., warmth, clarity, time-on-task, etc. It appears that no scales have been developed for the expressed purpose of recording teaching behaviors associated with inquiry processes in the classroom. This paper presents a scale for use in observing and recording teaching behaviors which bear a direct relationship to some of the theoretical components of inquiry teaching.

Procedure

The observation scale is based directly on a theoretical model for inquiry teaching suggested in part by the works of Suchman (1965, a, b, c, d, e, 1966), Thelen (1972), Taba (1964, 1966), and others.[1] The theoretical model consists of a set of formal propositions relating specific learning conditions to cognitive growth. Less formally, it is suggested that student inquiry will increase when four conditions are present: (1) students are sufficiently involved in the subject matter to invest attention, time, and energy in the project; (2) students are attempting to deal with a specific uncertainty or trying to understand a particular discrepant event; (3) opportunities are available to the student to manipulate data or explore alternative solutions; and (4) teachers employ questions which help the student make transitions from concrete phenomena to the concepts which clarify the phenomena.

The four components of an inquiry situation were elaborated into four distinct categories of teaching behavior:

Personalized Planning. Selecting and organizing instructional activities that stem from concerns of the students and are in touch with students' goals, interests, and needs. In low personalized planning the teacher arranges the instructional program independently of any knowledge about the students. In

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[1] A manuscript describing a theoretical model for inquiry teaching has been submitted to Peacock Press under the title, Theory Construction in Education: Toward Models for Cognitive Growth.

high personalized planning the teacher strives to know the student and to design classroom experiences specifically suited to those students.

Confrontational Emphasis. Arranging experiences so that critical distinctions become explicit and compelling. With low confrontational emphasis the teacher ignores discrepant features, offers simplistic solutions, avoids exploration of alternative methods or interpretations, and relies on authority, convention, or dogma to support a pre-determined conclusion. With high confrontational emphasis the teacher sharpens perception of distinctive features, recognized complexity, encourages alternative approaches, and capitalizes on discrepant explanations, interpretations, or value judgments.

Transitional Quering. Asking questions that encourage students to move toward deeper levels of understanding. Transitional quering stimulates students to take the next step in reaching for relationships just beyond those already grasped. In low transitional quering the teacher's question asks students merely to report information, that is, to recite, recall, describe, list, or enumerate. In high transitional quering the teacher's questions ask students to utilize information, that is, to distinguish, compare, contrast, organize, infer, extend, extrapolate, hypothesize, or evaluate.

Manipulative Opportunities. Providing arrangements which help students test their emerging ideas. These arrangements may be opportunities for experimentation, reflection, or discussion. They may include supplies, equipment, and reference materials that permit students to develop necessary information. With low manipulative opportunities, students do not have the opportunity for productive manipulation of objects and ideas. With high manipulative opportunities, students have the opportunity to confirm or reject their tentative ideas through testing.

For each of the four components of teaching behavior, a six point scale was constructed and each position of the scale was anchored by a cameo description of the teaching behaviors which would receive a given rating. For example, the rating of "1" on the scale for Confrontational Emphasis, the lowest rating, is defined as follows:

> This teacher makes no arrangements for encounters with puzzling experiences. He avoids complexity. Facts and figures are presented in a straightforward manner. Only one reaction or interpretation is deemed appropriate. The teacher avoids discrepant information and ideas, and gives no indication that alternative views exist or that they merit further consideration. Any ambiguity that arises is simplifed,

glossed over, or resolved with appeals to the textbook or some other authority.

An initial study of reliability and validity was conducted using audio tapes of ten student teachers conducting social studies classes in field situations. Two trained raters listened to the first fifteen minutes of each lesson and independently rated each teacher on the observation scales.

Criterion measures for the validity study were supplied by the university social studies supervisor of the ten teachers. Based on analysis of the tapes of the complete class, the supervisor counted the number of divergent questions and evaluative questions asked by each teacher during the lesson. The supervisor also ranked the ten teachers from high to low as "inquiry teachers" based on the teacher's purpose, the questioning strategy and the nature of the teacher-class interaction. All criterion measures were developed in the context of the pre-service training of the teachers in the study and were established independently of the investigators constructing the observation rating scale.[2]

Findings

The reliability of the scales is indicated by the following correlations between the first and second rater: Personalized Planning, .30; Confrontational Emphasis, .91; Transitional Quering, .55; and Manipulative Opportunities, .85.

Evidence for the validity of the scales is presented in Table 1, Correlations Between Observer Ratings and Criterion Measures.

Discussion

The reliability data reveal an uneven pattern with excellent rater agreement on the amount of Confrontational Emphasis and Manipulative Opportunities exhibited by the ten teachers, moderate agreement on the amount of Transitional Quering and relatively low agreement of the degree of Personalized Planning.

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[2]Appreciation is expressed to James Barth, Associate Professor of Social Studies Education, Purdue University, for supplying the tapes and rating the teachers.

The validity data reveal a relatively consistent pattern of high correlation coefficients between the observer ratings and the criterion measures. Confrontational Emphasis and Transition Quering are highly correlated with Inquiry Rank for the data from both observers.

Undoubtedly, the scales will benefit from development and refinement. The scales emerge directly from theoretical considerations of the nature of inquiry teaching, and are brief enough to be used without extensive training. The data from this study suggest that the scales hold promise for those interested in empirical studies of inquiry teaching.

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Table 1

Correlations between Observer Ratings and Criterion Measures

(n-10)

Observer Ratings	Criterion Ratings		
	Divergent Questions	Evaluative Questions	Inquiry Rank
Observer One			
Personalized Planning	.33	.72 **	.52
Confrontational Emphasis	.58 **	.72 **	.70 **
Transitional Quering	.52	.66 *	.70 **
Manipulative Opportunities	.17	.65 *	.29
Observer Two			
Personalized Planning	.75 **	.62 *	.86 **
Confrontational Emphasis	.82 **	.57 *	.85 **
Transitional Quering	.84 **	.54	.82 **
Manipulative Opportunities	.59	.53	.64 *

* Significant at or beyond .05

** Significant at or beyond .01